ESE 516: Assignment A7

Creating the Node-Red dashboard for Radiance-T project

- **Messages from Device ---- MQTT---- IBM Bluemix**

  Topic 1 : LocationData

  Type : Number

  JSON Structure:

```
var long1;
var lat1;

msg = {
        payload: JSON.stringify(
                {
                        d:{
                                "loc" :
                                        {
                                        "long" : long
                                        "lat" : la1t
                                                                },
                                }
                } )
};
return msg;
```

  Information – Sends the location coordinates or device id to display on the Board. The graph on dashboard shows the location map.

  Topic 2 : TempData

  Type : Number

  JSON Structure

```
Var temp1
msg = {
        payload: JSON.stringify(
                {
                        d:{
                                "temp" :temp1
                          },    } } )};
return msg;
```

Information – Sends the temperature data from IR temperature sensor on the device to display and analyze temperature on cloud. The graph on dashboard shows the temperature history over time.

Topic 3 : ImageData

Type : Number Array

JSON Structure

```
Var image1=[1,2,3,4,5,6,7,8]
msg = {
        payload: JSON.stringify(
                {
                        d: {
                “img” :{one:  image1[0],two:image1[1],
                three:image1[3], four:image1[4]
                        },    } } )};
return msg;
```

Information – Sends the raw thermal image data group of bits/pixel from thermal camera on the device to display and analyze it on cloud.

Topic 4 : ServoData

Type : Number

JSON Structure

```
Var servo1
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        “servo”:servo1
                         },    } } )};
return msg;
```

Information – Sends the stepper motor feedback/angle from device location to cloud. It is used to check the direction on sensor on device. It also gives rotation and movement of motor.

Topic 5 : BatteryData

Type : Number

JSON Structure

```
Var batt1
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        "batt":batt1
                         },    } } )};
return msg;
```

Information – Sends the reading of batter power from fuel gauge on device to cloud. It is used to show the amount of power left.

- **Messages from IBM Bluemix------- MQTT------ Device**

Topic 1: RotationData (ANGLE_TOPIC)

Type : Number

JSON Structure

```
int data
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        data:data
                         },    } } )};
return msg;
```

Information – Sends the specific angle from cloud to rotate the motor on device side

Information – Sends the specific angle from cloud to rotate the motor on device side

Topic 2: StopData (STOP TOPIC)

Type : Boolean

JSON Structure

```
boolean data
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        "datat":data
                         },    } } )};
return msg;
```

Information – Sets continuous rotation of motor on or off- Rotation enable or disable

Topic 4: LedData (LED_TOPIC)

Type : Boolean

JSON Structure

```
boolean data
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        "data":data
                         },    } } )};
return msg;
```

Information – Sends signal from cloud to device to test the led on device

Topic 5: FW_Data (FW_TOPIC)

Type : Boolean

JSON Structure

```
Boolean data
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        "data":data
                         },    } } )};
```

return msg;

Information – Triggers OTAFU from cloud on device to download new firmware from server.

Topic 6: CRCData (CRC_TOPIC)

Type : String

JSON Structure

```
Char * data
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        "data":data
                         },    } } )};
return msg;
```

Information – Sends CRC string for OTAFU operation to write on SD card before download and update

Topic 6: VerData (VER_TOPIC)

Type : number

JSON Structure

```
Int * data
msg = {
        payload: JSON.stringify(
                {
                        d: {
                        "data":data
                         },    } } )};
return msg;
```

Information – Sends version number for OTAFU operation to write on SD card before download and update